

Abstract Submitted
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Structure evolution in the evaporation of complex fluids¹ UR-VASHI GUPTA, ARANDEEP S. UPPAL, RICHARD V. CRASTER, OMAR K. MATAR, Imperial College London — Thixotropy has been of increasing interest for a variety of applications. Ideal thixotropy is defined as a reduction in viscosity during flow and subsequent recovery during rest and is usually attributed to a dynamic internal structure within the fluid, typically modelled by the inclusion of an extra parameter, λ , denoting the level of internal structure development. Complex particle-laden fluids exhibit thixotropy and furthermore can undergo gelation during evaporation. Hence, we consider the evaporation of thixotropic droplets, where we build upon previous models and link structure evolution to the particle concentration. The model is further extended to include a yield stress and thus an evolving pseudo-plug is observed during the evaporative process, and a systematic parametric study is undertaken.

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